National Airspace Redesign
High Altitude Redesign Briefing
for
Air Traffic Service Routes

HAR Phase 1 Functions

Design Concept:

- **RNAV / closely-spaced parallel RNAV routes**
  - **Using structure where most efficient**

- **Navigation Reference System**
  - **Efficiently defining flight paths – tactical and planned**

- **Non-Restrictive Routing**
  - **Providing users increased routing flexibility**

- **ATCAA & SUA waypoints**
  - **Mitigating SUA effects for civilian aviation**

Enabling capability:

- **Radar monitoring, RNAV/Advanced RNAV, RNP**

- **RNAV/Advanced RNAV & FMS data bases capacity**

- **URET and Navigation Reference System**

- **RNAV/Advanced RNAV, access to airspace schedules**

In Development

Coming Soon

Implemented
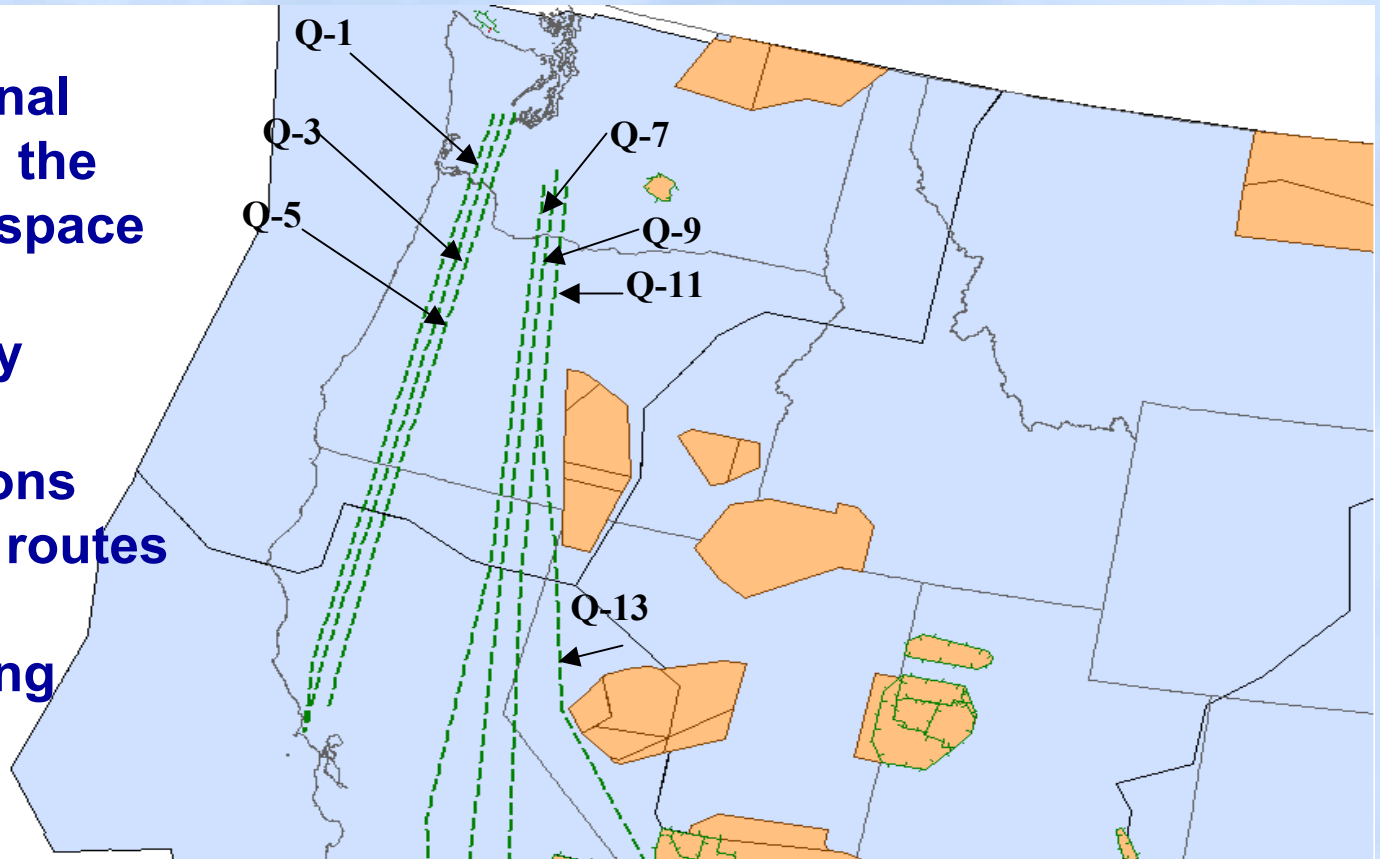
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Jet Routes

- **Routes based on NAVAID Location**
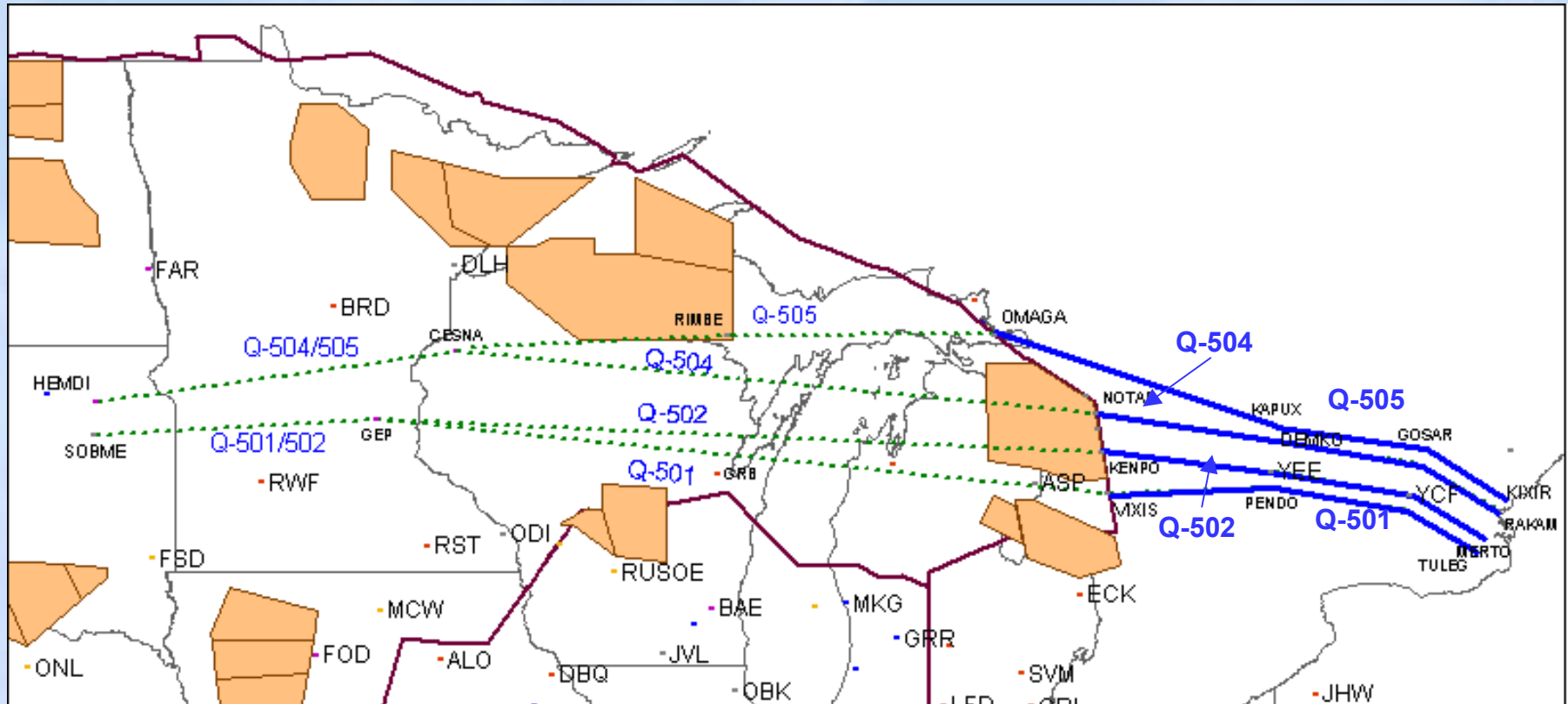
- **Flows that cross and converge**
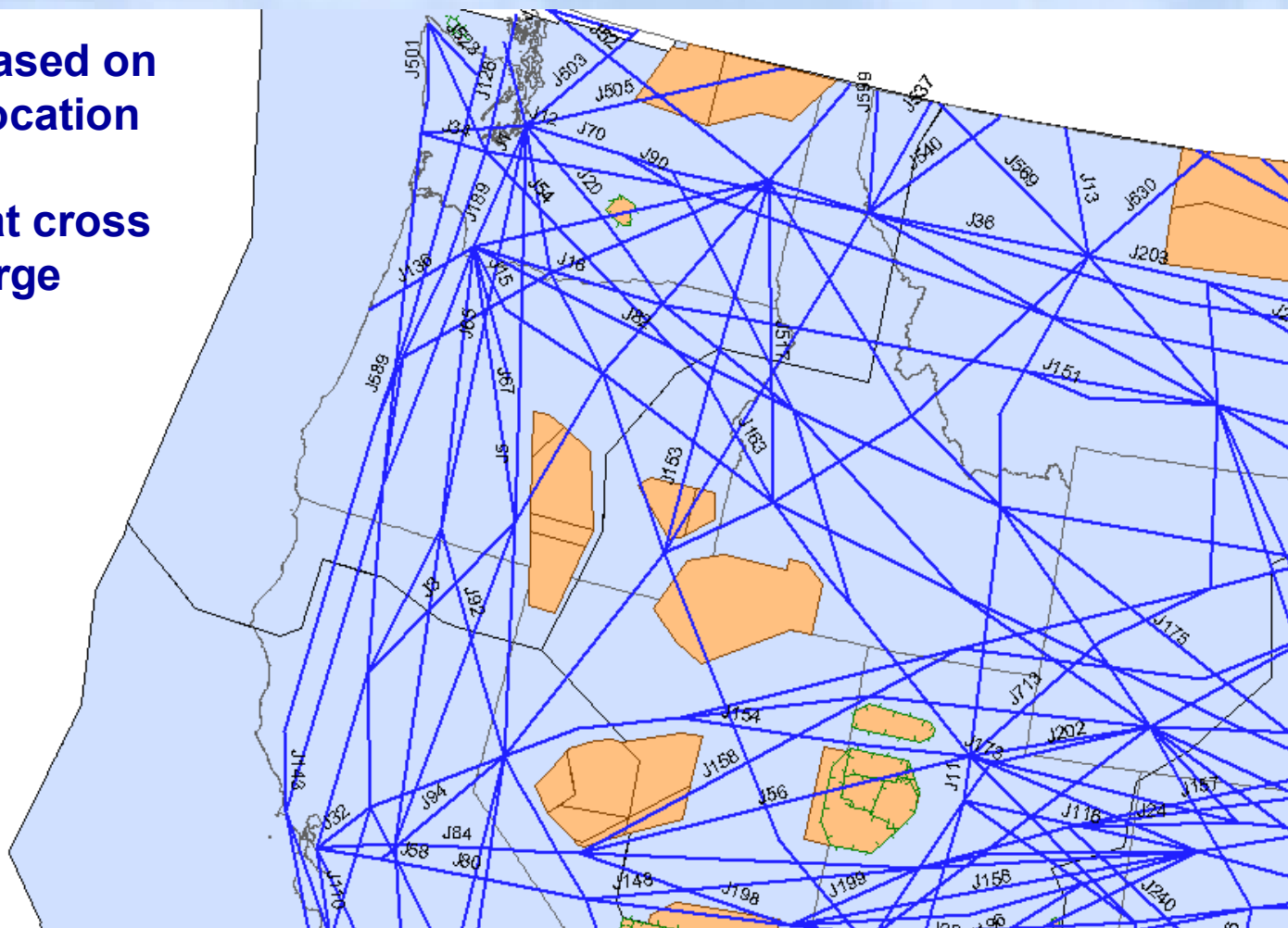
Q Routes - West Coast

- **Additional routes in the same airspace**
- **Greater efficiency**
- **Less conflictions between routes**
- **Radar monitoring required**

Q-1

Q-3

Q-5

Q-7

Q-9

Q-11

Q-13

Q Routes – US/Canada

Note: Q Routes in Canada are not charted, but defined as "Fixed RNAV Routes" in Canadian Flight Supplement

ATS "Q" Route

- **Historically in the U. S., IFR navigation has been through a system of ground based navigation aids using Federal Airways/Jet Routes that require pilots to fly directly toward or away from the NAVAID.**

- **Area navigation (RNAV) provides users with an ability to fly direct routes between any two points.**

- **FAA recently adopted International Civil Aviation Organization (ICAO) definition of "Air Traffic Service Route" as a general term to include: Federal Airways, Jet Routes, Military Training Routes, and RNAV routes.**
  - **Rule changed to permit RNAV route to start/end @ point in space**
  - **Waypoint spacing on RNAV routes is 12 – 500 NM's**

- **The US and Canada use "Q" as a designator for RNAV routes (US 1-499/Canada 500-999).**

ATS "Q" Route

- Initial 11 ATS RNAV "Q" routes were published and charted effective July 10, 2003.

- Q Routes NOTAM'd N/A while initial implementation issues being resolved.

- Initially GNSS (GPS) required to fly Q routes.
  - Aircraft with /G have GPS capability
  - Aircraft filing other RNAV suffixes may not have GPS capability

- Q routes to be used in radar environment only, consistent with existing ATC RNAV procedures.

Q Route Clearance by Suffix
(See following slide for details)

Filed Suffix	Flight Plan	Tactical - Assign
A	N/A	N/A
I	Q Routes or specific waypoints	Q Routes/waypoints*
E	Q Routes or specific waypoints	Q Routes/waypoints*
F	Q Routes or specific waypoints	Q Routes/waypoints*
R	Q Routes or specific waypoints	Q Routes/waypoints*
Q	Q Routes or specific waypoints	Q Routes/waypoints*
G	Q Routes	Q Routes
* If Q routes were filed, ATC may assign another Q route; otherwise assign waypoints.		

Q Route Clearance by Suffix

- **/A Aircraft are not RNAV Capable**
  - **May not file Q routes or waypoints**
  - **May not be cleared onto Q routes or via waypoints by ATC**

- **/G Aircraft are GNSS (GPS) Equipped**
  - **May file Q routes**
  - **May be cleared tactically onto Q routes by ATC**

- **/E, /F, /R, /Q aircraft may or may not have GNSS**
  - **May file Q routes depending on equipage**
  - **May be cleared onto any Q route if a Q route was filed**
  - **Others may be cleared via waypoints, including waypoints of any Q route**

- **/I aircraft**
  - **May be cleared the same as /E, /F, /R, /Q**
  - **This category includes aircraft that may have lower navigational performance accuracy, e.g. LORAN**

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ATS "Q" Route

- **Terminology and Phraseology for Q Routes has been included in:**
  - **Notice N7110.338, 7/3/03, Changes Order 7110.65N**
    - **Application: Radar separation shall be applied to all RNAV aircraft operating on a random (impromptu) route at or below flight level 450.**
    - **Published RNAV routes: State the letter "Q" followed by the route number in group form.**
    - **Example of phraseology: "Cleared via Q one forty five" " Fly heading one-five-zero to join Q three", "Cleared direct ELMAA, Q one, rest of route unchanged"**
  - **Notice N7110.339, 7/3/03 Changes Pilot Controller Glossary**
    - **Added: "Q Route – "Q" is the designator assigned to published RNAV routes used by the United States."**

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Add Local LOA and Procedure Changes if needed

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